

WHAT IS CLAIMED IS:

1. In a local area network, a method for communicating, using a 10 Gigabit Media Independent Interface, between a first node coupled to a first transceiver and a second node coupled to a second transceiver when the first and the second transceivers are in idle mode, comprising the steps of:

(1) transmitting an A-ordered set from the first node;
(2) transmitting an ordered set from the first node after said transmitted A-ordered set; and

(3) receiving the ordered set at the second node;

wherein:

the ordered set complies with IEEE Std 802.3ae™ specifications for ordered sets; and

the ordered set is different from ordered sets predefined by the IEEE Std 802.3ae specifications.

2. The method of claim 1, wherein the ordered set is a Q-ordered set.

3. The method of claim 2, wherein a code group in a lane 3 of the Q-ordered set is one of 000000001 and 000000010.

4. The method of claim 1, wherein the ordered set is preprogrammed within a Physical Coding Sublayer.

5. The method of claim 1, wherein the ordered set is capable of being programmed by a user.

6. The method of claim 1, further comprising the step of:
storing the ordered set in a memory at a Physical Coding Sublayer of the first node.

7. The method of claim 6, wherein more than one ordered set is stored in a queue in the memory, and further comprising the steps of:

(a) differentiating among the more than one ordered set stored in the queue in the memory; and

(b) causing a first ordered set to be transmitted before a second ordered set according to a hierarchy.

8. The method of claim 7, wherein an ordered set from the ordered sets predefined by the IEEE Std 802.3ae specifications has precedence in the hierarchy over the ordered set.

9. The method of claim 1, further comprising the step of:
generating the ordered set.

10. The method of claim 9, wherein said generated ordered set is generated upon recognizing a link status condition.

11. The method of claim 10, wherein said generated ordered set is generated upon recognizing a cause of the link status condition.

12. The method of claim 11, wherein the ordered set is used to identify the cause of the link status condition.

13. The method of claim 9, wherein said generated ordered set is generated upon detecting a link status condition.

14. The method of claim 13, wherein said generated ordered set is generated upon detecting a cause of the link status condition.

15. The method of claim 14, wherein the ordered set is used to identify the cause of the link status condition.

16. The method of claim 9, wherein said generated ordered set is generated at a Physical Coding Sublayer of the first node.

17. The method of claim 9, wherein said generated ordered set is generated at a Reconciliation Sublayer of the first node, and further comprising the steps of:

- (a) transmitting the ordered set from the Reconciliation Sublayer to a Physical Coding Sublayer of the first node;
- (b) receiving the ordered set at the Physical Coding Sublayer; and
- (c) identifying the ordered set at the Physical Coding Sublayer.

18. The method of claim 17, further comprising the step of:
identifying an ordered set from the ordered sets predefined by the IEEE Std 802.3ae specifications at the Physical Coding Sublayer.

19. The method of claim 1, further comprising the step of:
identifying the ordered set at the second node.

20. The method of claim 19, further comprising the step of:
identifying an ordered set from the ordered sets predefined by the IEEE Std 802.3ae specifications at the second node.

21. The method of claim 19, further comprising the step of:
performing an action in response to said identified ordered set.

22. The method of claim 1, wherein a third transceiver, coupled to a third node, is positioned between the first and the second transceivers, and further comprising the steps of:

- (a) receiving, at the third transceiver, the ordered set from the first node;
 - (b) transmitting, from the third transceiver, the ordered set to the second node;
- wherein the third node is incapable of identifying the ordered set.

23. A network device for implementing an IEEE Std 802.3ae™ Physical Coding Sublayer, comprising:

- a Physical Coding Sublayer service interface;

Encoders coupled to said Physical Coding Sublayer service interface and configured to encode a 10 Gigabit Media Independent Interface character into code groups;

- a Physical Medium Attachment service interface coupled to said Encoders;

Decoders coupled between said Physical Coding Sublayer service interface and said Physical Medium Attachment service interface and configured to decode said code groups into said 10 Gigabit Media Independent Interface character;

- a first logic circuit coupled between said Physical Coding Sublayer service interface and said Physical Medium Attachment service interface and configured to identify an ordered set received from a Reconciliation Sublayer;

- a memory coupled to said first logic circuit and configured to store said ordered set;

- a second logic circuit coupled to said first logic circuit and configured to ensure that said ordered set is transmitted in place of one of a K-ordered set and an R-ordered set during a clock cycle following a transmission of an A-ordered set; and

- a third logic circuit coupled between said Physical Coding Sublayer service interface and said Physical Medium Attachment service interface and

configured to identify said ordered set received from a Physical Medium Attachment sublayer;

wherein:

said ordered set complies with IEEE Std 802.3ae™ specifications for ordered sets; and

said ordered set is different from ordered sets predefined by said IEEE Std 802.3ae specifications.

24. The network device of claim 23, wherein an identity of said ordered set is preprogrammed within at least one of said first logic circuit and said third logic circuit.

25. The network device of claim 23, wherein an identity of said ordered set is capable of being programmed by a user.

26. The network device of claim 23, wherein at least one of said first logic circuit and said third logic circuit is further configured to identify an ordered set from said ordered sets predefined by said IEEE Std 802.3ae specifications.

27. The network device of claim 23, wherein said memory comprises a queue configured to store more than one said ordered set, and further comprising a fourth logic circuit coupled to said second logic circuit and configured to differentiate among said more than one said ordered set stored in said queue and to cause a first ordered set to be transmitted before a second ordered set according to a hierarchy.

28. In a network having nodes that operate according to a protocol that defines a node as being in an idle mode when the node is not transmitting or receiving a packet, a method of communicating between nodes during the idle mode, comprising the steps of:

- (1) generating a message formatted according to the protocol;
 - (2) transmitting the message from a first node of the network when the first node is in the idle mode; and
 - (3) receiving the message at a second node of the network when the second node is in the idle mode;
- wherein the message is different from messages predefined by the protocol for transmission during the idle mode.

29. The method of claim 28, wherein the message comprises a first portion that reports a link status condition.

30. The method of claim 29, wherein the message further comprises a second portion that reports a cause of the link status condition.